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[Reprinted from the Boston Medical and Surgical Journal  
of January 9, 1896.]

## ANOTHER CASE OF FRACTURE OF THE HUMERUS FROM AN UNUSUAL CAUSE.<sup>1</sup>

### A SPIRAL FRACTURE FROM TORSION.

BY GEORGE H. MONKS, M.D.

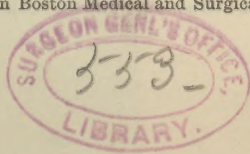
IN the "Boston City Hospital Medical and Surgical Reports" for 1895,<sup>2</sup> I gave at length the history of the case of a man who had fractured his right humerus while engaged in that test of strength in which two adversaries sitting opposite to each other at a table, grasp each other's hands, and, while the elbows rest upon the table, each tries to push his opponent's hand down. The case did not present any peculiarities except that the cause was an unusual one, and it was for this reason that I reported it. The fracture had evidently been due to extreme torsion of the shaft of the humerus.

Judging from the scanty literature on the subject, fractures of the humerus from this cause must be extremely rare. I was therefore much surprised, as well as interested, to have called to my attention recently a second case of fractured humerus from the same cause. The man, a bar-tender, twenty-four years

<sup>1</sup> Read before the Surgical Section of the Suffolk District Medical Society, November 6, 1895.

<sup>2</sup> Also reported in Boston Medical and Surgical Journal, March 21, 1895.

presented



by the author

old, was engaged with a friend in the above-described sport, when the right humerus broke near the middle of the shaft. For this injury he was admitted to the Boston City Hospital on the same day (September 11th). Soon after he entered the hospital, delirium tremens developed, and later pneumonia; and the patient died on September 19th, eight days after the accident. Dr. M. F. Gavin, to whose service the man had been assigned on entering the hospital, kindly allows me to publish this case. An autopsy was performed soon after death, and I was asked to make an examination of the injured bone. An incision was made on the outer side of the arm from the shoulder to the elbow and reaching down to the bone. In the vicinity of the fracture much extravasated blood was found, and some of the muscles were lacerated. Apparently none of the vessels or nerves were injured. The bone itself was removed entire. It was cleaned, and then boiled for about forty-eight hours, after which it was dried and carefully examined. The bone was apparently of average size and strength. There was a fracture at the junction of the lower and middle thirds. The accident had broken the bone into three pieces, the upper piece constituting about three-fifths of the entire length of the bone; the lower piece, the remaining two fifths; the third piece being a vertical splinter about three inches long from the inner aspect of the bone. When these three fragments were placed together they fitted accurately. The principal line of fracture was a spiral one. The drawing shows this spiral line of



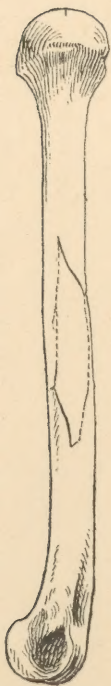


FIG. 1.

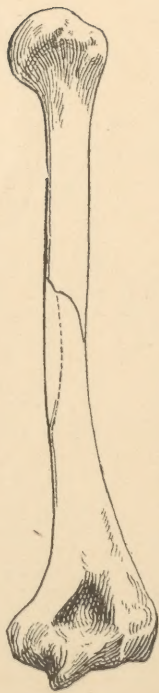


FIG. 2.

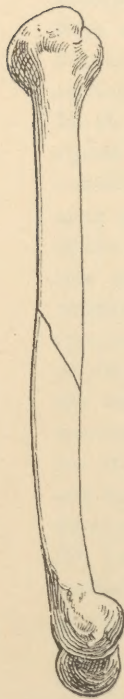


FIG. 3.

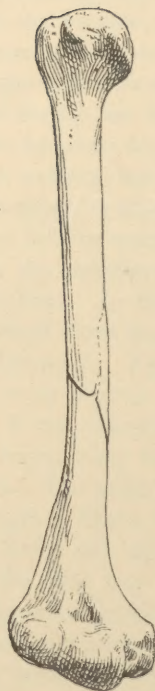


FIG. 4.

fracture (indicated by an unbroken black line) on the four aspects of the bone.

This line commenced above on the inner aspect of the bone (Fig. 1) and crossed around the back of the bone (Fig. 2) obliquely downwards and outwards; and, still pursuing the same spiral course around the outer side (Fig. 3) and front (Fig. 4), it finally returned to the inner aspect of the bone (Fig. 1), where it ended at a point about three and a half inches below where it started. Thus a complete spiral was made about the bone. This spiral was complicated by two other lines of fracture on the inner aspect of the bone which were vertical and close together, and which completed the separation of the small fragment already referred to. The vertical sides of this fragment are indicated in the figures by the dotted lines.

The case seems to be interesting not only on account of the unusual cause, but also because of the spiral nature of the fracture, such a fracture being just what would be expected from a severe twist (torsion) of the bone.

The first case of fracture, to which I have referred, I considered, at the time of examination, to be a transverse fracture; but this was after a clinical examination only, and at that time I did not have in mind the probability that a fracture which followed torsion of the bone, would be spiral in character. Dr. F. B. Lund has kindly called my attention to the fact that several cases of fracture of the humerus have been reported



during the attempt by Kocher's method of torsion to reduce old dislocations of the shoulder, and that the forces at work during this procedure are analogous to those employed in the sport to which I have referred; for while the lower end of the bone is strongly rotated outwards, the upper end is either rotated inwards by the muscles, or resists the outward rotation. It would be interesting to know whether fractures which have occurred during the use of Kocher's method, were, what might be called "spiral" or not.